SAPC 1551
Copy 1 of 2 rec'd

July 29, 1955

HIM

I have made a little study of available resolution target ranges for use in our flight test program, and find that there are several scattered around the United States but it does not look as though we should try to use someone elses resolution targets. There is one at Edwards which is almost what we would require but actually was designed for considerably lower altitudes and would not be truly satisfactory even if there weren't other factors to consider. I thought for a while that the range at Eglin Field would be properly proportioned and that we could just duplicate it. I got a hold of the specifications and description and it turns out that it is considerably larger than anything we would need although ours turns out to be pretty big. Further, for some unknown reason, rather irregularly spaced steps of resolution were selected for the Eglin targets, so that With this background I have laid out a set of targets which will meet our purposes admirably and yet are reduced to as small a size as I have been able to work out.

The enclosed table gives the resolution figures for each pattern and the important dimensions for each. Figure 1 shows the array in a single pattern and figure 2 shows an array of patterns. The array within each pattern should be followed rather accurately since these are the standard proportions used by almost everyone in this business. The distribution of the patterns in the large array can be subject to considerable rearrangement. The one which I have suggested, I believe, utilizes a minimum number of square feet but even so requires an area 180' x 110'. I have indicated black lines on white background which might be black paint on the white concrete runway. On the other hand, if there is a black tar runway the lines could be painted white. The scale of grays along the side should be rather carefully done with fairly uniform steps of grayness. We should have two complete arrays of patterns; one true black and white and the other gray and white or gray and black. The contrast of the second should be in the neighborhood of 20% since it is felt that this contrast represents that which will be encountered most often in practice.

The little box marked 1/10 in the suggested arrangement is an exact duplicate of the large arrangement at 1/10 scale, and encloses target numbers 11-18. Numbers 19 and 20, which are 1/10 scale of 9 and 10, could be included but their resolution is of such high value that I am sure we would not photograph it with any of our equipment. They are so small that they would be rather hard to make with any accuracy and therefore I suggest they be left out. I am assuming that you will undertake to have these facilities installed but if this assumption is wrong, please let me know as soon as possible so that we can start some other mechanism in motion.

I expect to be in California the week of August 8 to try to pick up on the last minute problems prior to the 15th, and then again on perhaps the 29th of August for an extended period to see the test program well-launched. The data camera has taken some pictures which are not completely satisfactory but certainly are extremely promising, and I have little doubt that this machine will be ready to go.

OCT/Col Master

SAPC 1551
Copy 1 of 2 rec'd

The drift sight is rapidly taking shape. It now exists in the form of a large pile of sub-assemblies in our Model Shop. The reworked 24" lenses are available to the number of six and are now being tested. Some of them really look quite good. The prototype 36" lens has been tested and appears to require some design modification. Jim is working on this particular item at this moment. The large mirror for the 36" has been completed and I believe represents a truly significant advance in the optics art for it combines real precision of optical surface with a lightness not before achieved in mirrors of this size. We are still waiting for the definitive optical design for "C" and for the optical design of the test equipment.

I hope you enjoyed your recent "vacation".

Rod

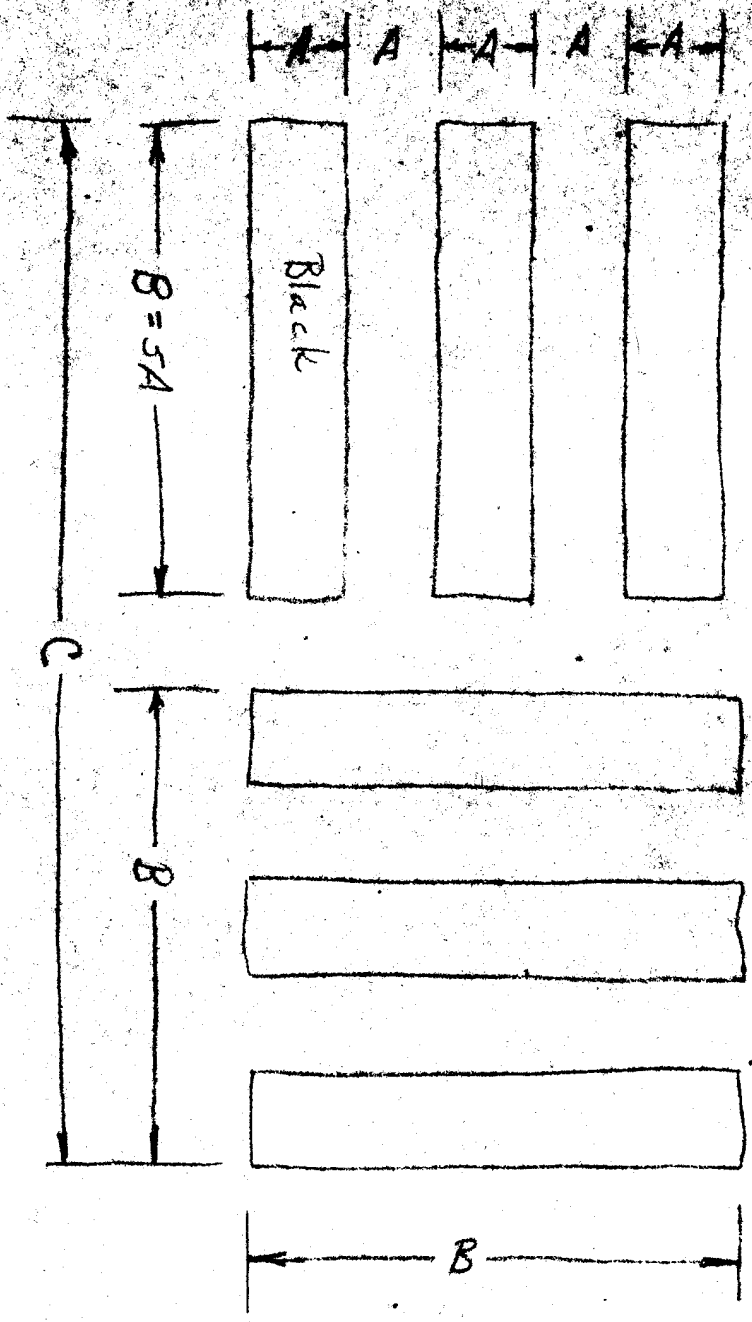
RMS/dmg

SAPC 1551
Copy 1 of 2 rec'd

TABLE 1

Target No.	Equivalent Resolution 1/mm 24"	36"	120"	Dimensions A ft.	in.	B ft.	in.	C ft.	in.
0	5	3.3		10		50		110	
1	6.3	4.2		7	11	40		87	
2	7.9	5.3		6	4	31	5	69	
3	10.0	6.6		5		25		55	
4	12.5	8.4		3	11	19	10	44	7
5	16.0	10.5		3	1	15	8	35	2
6	20.9	13.2	4.0	2	6	12	6	27	6
7	25.0	16.7	5.0	2	0	10		22	
8	31.5	21.0	6.3	1	7	7	11	17	6
9	40.0	26.6	8.0	1	3	6	5	13	10
10	50.0	33.3	10.0	1	0	5		11	
11	64.0	42.0	12.5	0	9½				
12	80.0	53.4	16.0	0	7¼				
13	100.0	66.6	20.0	0	6	2	6	5	6
14		83.5	25.5	0	4-3/4				
15			32.0	0	3-3/4				
16			40.0	0	3	1	3	2	9
17			51.0	0	2½				
18			64.0	0	1-7/8				

Fig 1



Detail of Single Pattern Bars 7/28

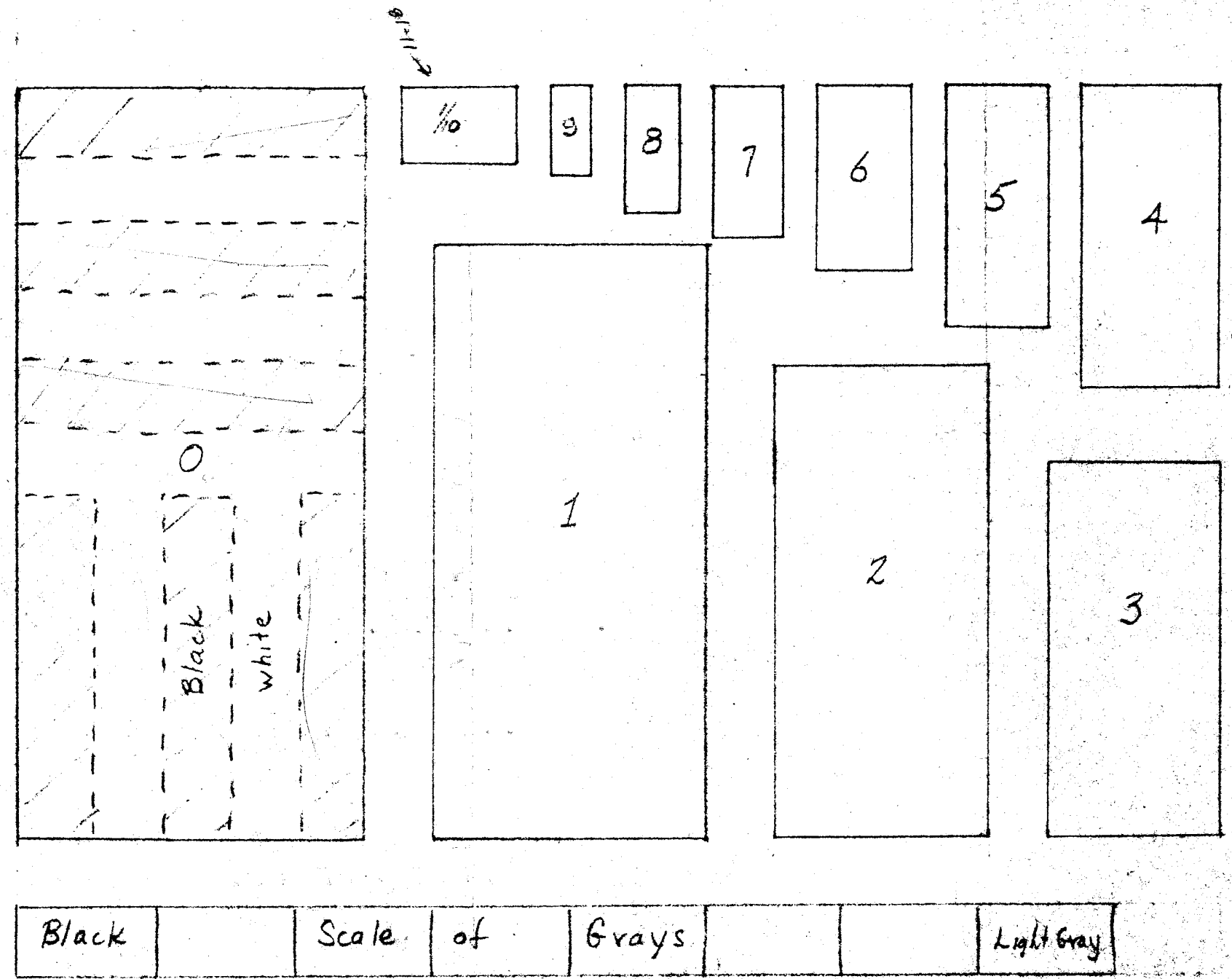


Fig 2

Suggested Arrangement of Patterns (1" = 20') RWS 7/28

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